AMENDMENTS TO THE CLAIMS

1-5. (Cancelled).

6. (New) A gas engine electric power generating system comprising:

an electric power generating apparatus including an electric power generator coupled to a pilot fuel oil ignition type gas engine having at least one cylinder and a cylinder pressure detector;

a combustion diagnosis apparatus for diagnosing a combustion condition within the gas engine in response to a cylinder pressure detector signal;

a combustion controller that adjusts a fuel mixture comprising recovered methane gas having a methane concentration of 30-50% and ventilated methane gas having a methane concentration of 0.3-0.7 % in the gas engine in response to a combustion condition signal from said combustion diagnosis apparatus; and

a gas injection device that introduces the fuel mixture into the cylinder while mixing the recovered methane gas and the ventilated methane gas to define a lean methane/air mixture having a methane concentration of 3-5% and having an air excess ratio not less than 2, such that the gas engine operates to produce electric power.

- 7. (New) A gas engine electric power generating system in accordance with claim 6 wherein said combustion controller adjusts the fuel mixture by comparing a maximum pressure ratio defined as P_p/P_0 against predetermined pressure ratios each corresponding to at least one of a plurality of diagnoses, where P_p is a maximum cylinder pressure in a cycle and P_0 is a compression pressure for at least one predetermined crank angle in a compression stroke, to facilitate preventing engine knock and engine misfire.
- 8. (New) A gas engine electric power generating system in accordance with claim 6 further comprising a coal mine that supplies the recovered methane gas and the ventilated methane gas.
- 9. (New) A gas engine electric power generating system, said system comprising:

an electric power generator coupled to a pilot fuel oil ignition type gas engine having at least one cylinder and a cylinder pressure detector;

means for diagnosing a combustion condition within the gas engine in response to a signal from the cylinder pressure detector;

means for adjusting a fuel mixture of recovered methane gas having a methane concentration of 30-50% and ventilated methane gas having a methane concentration of 0.3-0.7% in the gas engine in response to a combustion condition signal from said means for diagnosing a combustion condition; and

means for introducing the fuel mixture into the cylinder while mixing the recovered methane gas and the ventilated methane gas to define a lean methane/air mixture having a methane concentration of 3-5% and having an air excess ratio not less than 2.

- 10. (New) A gas engine electric power generating system in accordance with claim 9 wherein said means for adjusting the fuel mixture further comprises comparing a maximum pressure ratio defined as P_p/P_0 against predetermined pressure ratios each corresponding to at least one of a plurality of diagnoses, where P_p is a maximum cylinder pressure in a cycle and P_0 is a compression pressure for at least one predetermined crank angle in a compression stroke, and facilitates preventing engine knock and engine misfire.
- 11. (New) A gas engine electric power generating system in accordance with claim 9 further comprising a coal mine that supplies the recovered methane gas and the ventilated methane gas.
- 12. (New) A method for reducing carbon dioxide emissions using emissions credit trading, said method comprising:

supplying recovered methane gas having a methane concentration of 30-50% and ventilated methane gas having a methane concentration of 0.3%-0.7% from a coal mine;

generating electric power with an apparatus including an electric power generator coupled to a pilot fuel oil ignition type gas engine having at least one cylinder and a cylinder pressure detector;

diagnosing a combustion condition within the gas engine in response to a cylinder pressure detector signal using a combustion diagnosis apparatus;

adjusting a fuel mixture comprising the recovered methane gas and the ventilated methane gas in the gas engine, using a combustion controller, in response to a combustion condition signal from the combustion diagnosis apparatus;

introducing the fuel mixture into the cylinder using a gas injection device while mixing the recovered methane gas and the ventilated methane gas to define a lean methane/air mixture having a methane concentration of 3-5% and having an air excess ratio not less than 2, such that the gas engine operates to produce electric power; and

registering a carbon dioxide emissions credit for carbon dioxide produced from the generator, defined as a difference in a greenhouse effect index between greenhouse producing gases, on a credit market for trading, wherein the greenhouse producing gases are coal mine methane gas released to the atmosphere and combusted methane gas released to the atmosphere as carbon dioxide.

13. (New) A method for reducing carbon dioxide emissions using emissions credit trading in accordance with claim 12, wherein the coal mine methane gas released to the atmosphere has a first greenhouse effect index and the combusted methane gas released to the atmosphere has a second greenhouse effect index.